

US EPA ARCHIVE DOCUMENT

Date Out EFB: 0 5 FEB 1982

To: Product Manager 15 LaRocca  
TS-767

From: Dr. Willa Garner *WJ*  
Chief, Review Section No. 1  
Environmental Fate Branch

Attached please find the environmental fate review of:

Reg./File No.: 618-EUP-RN

Chemical: Avermectin B<sub>1</sub>

Type Product: Insecticide

Product Name: MK-936

Company Name: Merck Sharp & Dohme

Submission Purpose: Fire Ant Control

ZBB Code: 3(c)(5)

ACTION CODE: 700

Date in: 12/14/81

EFB # 104

Date Completed: 0 5 FEB 1982

TAIS (level II) Days

Deferrals To:

52

3

Ecological Effects Branch

Residue Chemistry Branch

Toxicology Branch

## 1.0 INTRODUCTION

Merck Sharp & Dohme has submitted an application for an experimental use permit for avermectin B<sub>1</sub> for red imported fire ant control. Acc. No. 246358

## 2.0 MK-936: Avermectin B<sub>1</sub>

See Figure for structure.

## 3.0 DISCUSSION OF DATA

### 3.1 Hydrolysis of avermectin B<sub>1</sub> at three pH's.

This study was not conducted due to limitations in lab personnel. Registrant indicates study should be completed before the end of March, 1982.

### 3.2 Aerobic Soil Metabolism Study: Fate of Avermectin B<sub>1</sub>a After Application to Soil. D.L. Bull, Agricultural Research Service, USDA, 9/30/81.

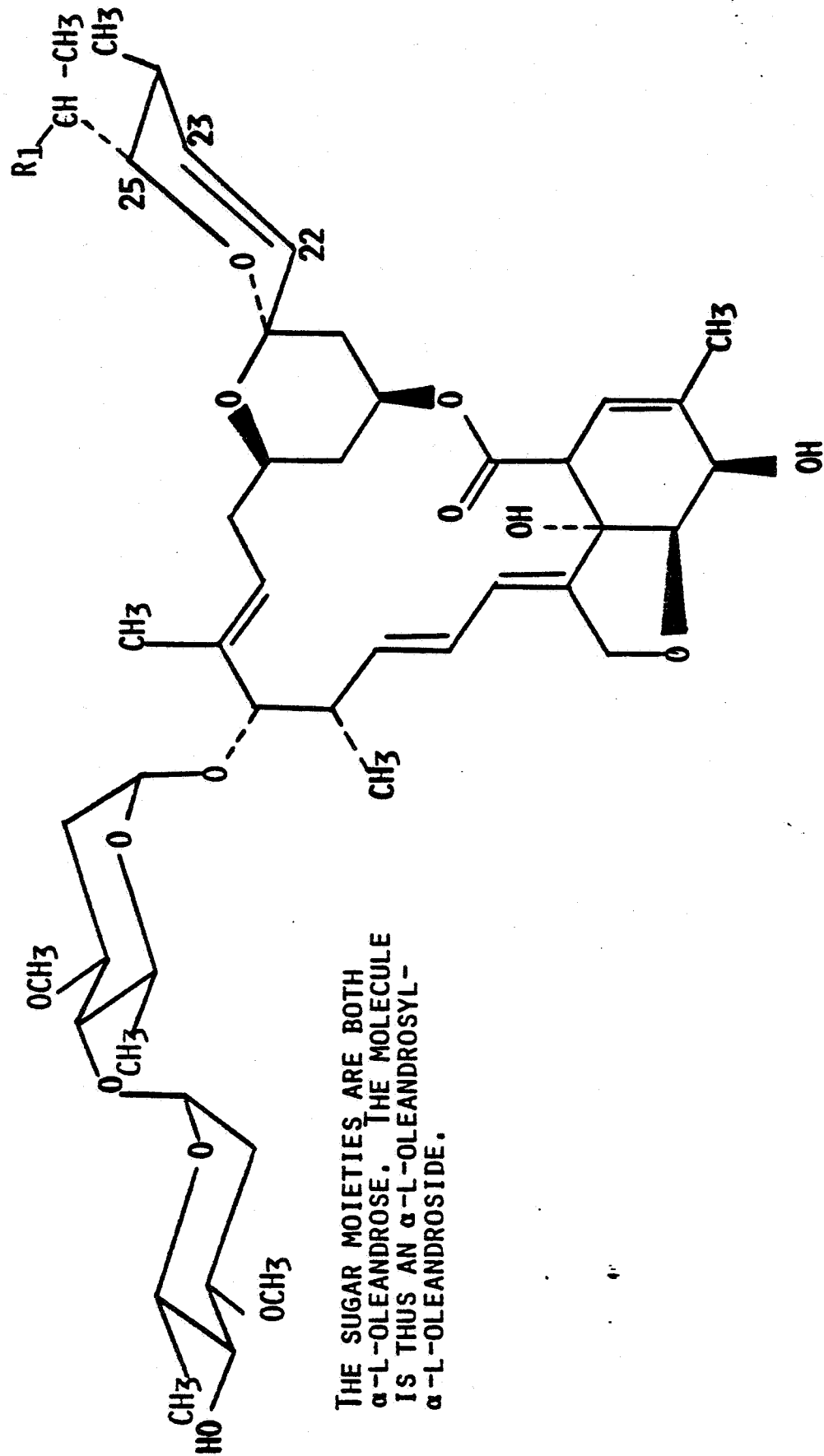
Tritium labeled avermectin B<sub>1</sub> a was used at 0.10 and 1.0 ppm in Lufkin fine sandy loam and washed construction grade sand. In addition, an experiment using 50 ppm avermectin was conducted in the sandy loam soil.

Ten grams of soil were placed into standard glass scintillation vials. After the vials were treated with appropriate amounts of avermectin and the contents mixed thoroughly, one ml of water was added and the moisture was allowed to disperse throughout the soil. Samples, other than 0 hr samples, were placed into vented dessicators containing water to maintain high humidity levels. Samples were kept in these containers at ambient lab temperatures.

Extracted soil was air dried and held for combustion analysis of unextracted tritium. Solvent extracts were radioassayed, dried and analyzed with TLC. Radioactive materials were located on TLC via autofluorography procedures and quantitation was accomplished via LSC.

Dried extracted soil was combusted in a tube furnace for 30 min at 1000°C in an oxygen atmosphere. Released tritium was trapped as tritiated water in a U-tube cold trap. Quantitation of U-tube contents was accomplished via LSC. Unextractable tritium residues have not been identified.

**MK-936**  
**AVERMECTIN B1**  
**L-676,863**



3  
 $R_1 = C_2H_5 \geq 80\%$  (AVERMECTIN B1A, L-676,895)  
 $R_1 = CH_3 > 20\%$

Tables 1-4 indicate preliminary results. It should be noted that compound 5 is identified as avermectin and compound 7 may be the monosaccharide derivative. Other degradates were not identified.

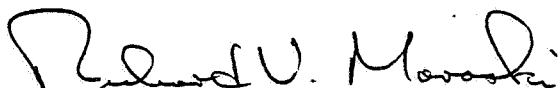
#### Conclusion

The half-life appears to be about 4 weeks in sandy loam but about 10 weeks in construction sand. Identification of major metabolites is not given.

#### 4.0 RECOMMENDATIONS

EFB cannot concur with the EUP until

1. the hydrolysis study is completed and submitted for review.
2. the aerobic soil metabolism study is submitted in its final form which includes soil characteristics and identification of major metabolites formed.



Richard V. Moraski  
Chemist  
Environmental Fate Branch

Avermectin science review

---

Page \_\_\_\_\_ is not included in this copy.

Pages 5 through 8 are not included in this copy.

---

The material not included contains the following type of information:

- ☐ Identity of product inert ingredients
  - ☐ Identity of product impurities
  - ☐ Description of the product manufacturing process
  - ☐ Description of product quality control procedures
  - ☐ Identity of the source of product ingredients
  - ☐ Sales or other commercial/financial information
  - ☐ A draft product label
  - ☐ The product confidential statement of formula
  - ☐ Information about a pending registration action
  - ☒ FIFRA registration data
  - ☐ The document is a duplicate of page(s) \_\_\_\_\_
  - ☐ The document is not responsive to the request
- 

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.

---